

**DRAFT FACT SHEET
NPDES PERMIT REISSUANCE
WASTE WATER TREATMENT PLANT AT BLUE PLAINS
WASHINGTON, DC**

August, 2002 Draft for Public Comment

NPDES Permit Number: DC0021199

THE PURPOSE OF THIS ACTION IS THE PROPOSED ISSUANCE OF A NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT TO DISCHARGE POLLUTANTS TO WATERS OF THE UNITED STATES PURSUANT TO THE PROVISIONS OF THE CLEAN WATER ACT (CWA) OF 1987.

1. NOTICE OF INTENT TO ISSUE A PERMIT.

The United States Environmental Protection Agency, Region III has made a tentative determination to reissue a permit for the discharge of treated municipal wastewater from the Blue Plains Wastewater Treatment Plant and treated and untreated storm water through the District of Columbia's combined sewer system as described in the permit application and herein. Permit requirements are based on the Clean Water Act (33 U.S.C. 1251 et seq.), hereinafter referred to as the Act, and NPDES regulations (40 CFR Parts 122, 124 and 133).

2. PERMITTING AUTHORITY.

The NPDES Permitting authority is: U.S. Environmental Protection Agency, Region III, Office of Watersheds, MD/DC Branch (3WP13), 1650 Arch Street, Philadelphia, PA 19103. The permit writer is: Mary Letzkus (215-814-2087)

3. APPLICANT.

The applicant is: District of Columbia Water and Sewer Authority, Blue Plains Wastewater Treatment Plant, 5000 Overlook Avenue, Washington, DC 20032. The contact person is: Walter Bailey (202-787-4172)

4. EFFECTIVE DATES.

The permit will become effective 30 days after the final determinations are made, unless a request for an evidentiary hearing is submitted within 30 days after receipt of the final determination.

5. PUBLIC NOTICE.

Upon publication of the public notice and this fact sheet, a 30 day public comment period shall begin. During this period, any interested person may submit written comments on the draft permit to the EPA Region III contact listed above. All persons wishing to comment on any condition of the draft NPDES permit or the Director's tentative decision to issue this permit, must raise all reasonably ascertainable issues and submit all reasonable arguments supporting their position in writing on or before the public notice expiration date. All comments should include the name, address and telephone number of the commenter and a concise statement of comment and the relevant facts upon which it is based.

During this period, any person may request a public hearing to clarify issues involved in the permit decision. A request for a public hearing shall be in writing and shall state the nature of the issues proposed to be raised at the hearing.

After the expiration date of the public notice, the Director, Office of Water, will make final determinations with respect to permit issuance. The tentative determinations contained in the draft permit will become final conditions if no substantive comments are received during the public notice period.

A copy of the draft permit, this fact sheet and the administrative record are available at the Martin Luther King, Jr. Library, 901 G Street, N.W. Washington, DC 20001 during normal business hours. In addition, copies of the draft permit and fact sheet will be mailed as requested in writing or by telephone call to Mary Letzkus at the address and telephone number listed above.

6. BRIEF DESCRIPTION OF THIS ACTION.

US EPA Region III, which is the NPDES permitting authority for the District of Columbia, proposes to reissue a National Pollutant Discharge Elimination System (NPDES) permit to the District of Columbia Water and Sewer Authority (WASA) for the Blue Plains Waste Water Treatment Facility. This permit modifies the following conditions:

- flow conditions during conduct of the Blue Plains Liquid Process Improvement Program, which is a massive improvement and rehabilitation program at the waste water treatment plant;
- effluent phosphorus conditions;
- effluent ammonia conditions;
- adds a target goal for total nitrogen;
- nine minimum controls program for CSOs;
- the long-term control plan for CSOs;
- removes the fish tissue study for mercury;

- removes the requirements for biomonitoring and toxicity reduction evaluation;
- updates pretreatment conditions;
- adds a new requirement for submission of effluent data to the United States Fish and Wildlife Service and the National Marine Fisheries Service;
- adds a new requirement for submission of a Storm Water Pollution Prevention Plan; and
- adds the requirement to test influent for TSS and BOD to verify percent reduction by secondary treatment.

7. FACILITY DESCRIPTION.

The Blue Plains Wastewater Treatment Plant is the largest advanced waste water treatment plant in the world. It covers 150 acres, has a design capacity of 370 million gallons per day (mgd), and a peak capacity of 1.076 billion gallons per day. The collection system includes 1,800 miles of sanitary and combined sewers, 22 flow-metering stations, nine off-site waste water pumping stations and 16 storm water pumping stations within the District. Separate sanitary and storm sewers serve approximately two-thirds of the District. In older portions of the system, such as the downtown area, combined sanitary and storm sewer systems are prevalent.

The Blue Plains Wastewater Treatment Plant serves the District of Columbia, Montgomery and Prince Georges Counties in Maryland and Fairfax and Loudoun Counties in Virginia. Waste water capacity for the District of Columbia is allocated at 153 mgd; the Washington Suburban Sanitary Commission (which serves Montgomery and Prince Georges Counties in Maryland), has an allocation of 169.6 mgd; Fairfax County, Virginia, has an allocation of 31 mgd; Loudoun County, has an allocation of 16.4 mgd; and other Potomac interceptor users share an allocation of 16.4 mgd.

During wet weather, the plant flow capacity varies depending upon whether or not the peak flow occurs for greater than or less than four (4) hours. The plant has two discharge points, outfalls 001 and 002. Outfall 001 functions as an excess flow conduit and is used to avoid hydraulic overloads to the plant during wet weather. Effluent from outfall 001, which discharges to the Potomac River, receives primary treatment, disinfection and dechlorination. Outfall 002, which also discharges to the Potomac River, is the principle discharge point. Treatment for this outfall includes primary treatment, secondary treatment, nitrification, biological nitrogen removal, filtration, disinfection and dechlorination.

The treatment plant and sewer system discharge to the Potomac and Anacostia Rivers, Rock Creek and the Little Falls Branch. In its Water Quality Standards (WQS), the District of Columbia has designated these streams for secondary contact recreation, aesthetic enjoyment, aquatic life, water oriented wildlife, raw water source for industrial water supply and for navigational use.

The permittee operates a Combined Sewer Overflow (CSO) system which has a total of 60

outfalls. There are 16 CSOs which discharge to the Anacostia (CSO outfalls numbered 004 through 019), 14 CSOs are located on the Potomac, 29 CSOs discharge to Rock Creek (CSO outfalls numbered 031 through 059) and one CSO discharges to Little Falls Branch (CSO outfall numbered 060). CSO outfall 030, which previously discharged to the Potomac River, has been abandoned. This system is designed to convey waste to the treatment plant and to prevent wet weather flow from exceeding the hydraulic capacity of the sewers and/or the treatment plant.

During the life of this permit, the waste water treatment plant will undergo a program of improvement and rehabilitation, which will affect most of the treatment processes at the plant. The construction has been divided into seven major phases which necessitates the removal of significant process tankage from service. During the construction period, as significant plant facilities will be out of service in nearly every plant process, an estimated 25% reduction will be required in the amount of wet weather peak flows receiving full treatment and the wet weather peak flows receiving primary/disinfection treatment.

The Blue Plains Waste Water Treatment Plant consists of the following treatment technologies:

Primary Treatment - a waste water treatment process that allows particles which float or settle to be separated from the water being treated. At Blue Plains, this process includes the following processes: raw wastewater pumping; grit removal; grease separation and primary sedimentation. Solids removed from the process are treated by digestion, elutriation and dewatering.

Secondary Treatment - is a waste water treatment process used to convert dissolved or suspended materials into a form which can be separated from the water being treated. This process usually follows primary treatment by sedimentation. At Blue Plains, secondary treatment is accomplished by means of a modified-aeration step-feed activated sludge process. The secondary treatment facilities are comprised of aeration basins, secondary sedimentation basins, sludge return and wasting systems, the secondary blower facilities with associated blowers and diffusers and pumping stations. At Blue Plains carbon is reduced by use of coarse bubble diffused aeration and the plant uses chemical precipitation for phosphorus removal.

Biological Nitrogen Removal - a process whereby ammonia nitrogen is converted to nitrate nitrogen. The process also includes denitrification facilities for nitrogen removal, filtration for effluent polishing and chlorination for effluent disinfection. Blue Plains converted to full plant BNR in the spring of 2000.

Nitrification - an aerobic process in which bacteria change the ammonia and organic nitrogen in waste water into oxidized nitrogen (usually nitrate). The second stage BOD is sometimes referred to as the "nitrification stage," first stage BOD is called the "carbonaceous stage." Blue Plains employs sparged air turbines for oxygenation.

Denitrification - an anaerobic process that occurs when nitrite or nitrate ions are reduced to nitrogen

gas and bubbles are formed as a result of this process. The bubbles attach to the biological flocs and float the flocs to the surface of the secondary clarifiers. This condition is often the cause of rising sludge observed in secondary clarifiers or gravity thickeners. At Blue Plains, the denitrification facilities have been expanded to treat the entire plant flow.

Filtration and Disinfection and Dechlorination - includes multimedia filtration of nitrified effluent and disinfection of the filtered effluent by chlorination and dechlorination prior to discharge.

Solids Process - includes gravity thickening and anaerobic digestion of primary sludges, air flotation thickening of waste activated and chemical sludges, vacuum filtration of the thickened and digested sludges and direct off-site disposal of the vacuum filter cake.

Chemical Addition - chemicals may be employed in the liquid stream treatment operations for a variety of functions. The chemicals employed and the treatment application are described briefly below.

Odor Control - Chlorine may be applied at raw wastewater pumping station numbers 1 and 2 and to the effluent from the grit removal facilities.

Settleability Enhancement - polyelectrolytes (polymers) may be added as follows: Influent to primary sedimentation; Influent to secondary sedimentation; and Influent to nitrification sedimentation

Phosphorus Removal - iron salts including ferric chloride, ferrous sulfate and liquid alum may be added to the unit process as follows: primary sedimentation, secondary treatment, nitrification and effluent filtration.

Metal Salts - are used for the precipitation of phosphorus and as an aid in enhancing Settleability of sludges and mixed liquors.

pH - lime is applied to the effluent to nitrification in order to maintain an adequate pH level for the nitrification process.

Foam Control - Commercial defoamant compounds can be added to secondary treatment and nitrification as needed.

Disinfection - the process used to kill most microorganisms in wastewater including essentially all disease causing bacteria. At Blue Plains, chlorine is used to disinfect effluent discharged from both plant outfalls.

Dechlorination - as noted above, chlorine is used to disinfect effluent discharged at both plant outfalls,

however, excess chlorine is removed from the effluent by the addition of sulfur dioxide.

Solids Processing - polymers are used in the dissolved air floatation thickening process as stabilization along with ferric chloride for aiding dewatering during vacuum filtration and at the centrifuges as a dewatering aid.

8. PERMIT EFFLUENT LIMITS.

This permit establishes effluent conditions for outfalls 001, 002 and 019 and all combined sewer system outfalls in accordance with the provisions of the Clean Water Act (CWA), and its implementing regulations found at 40 CFR Section 122, the District of Columbia Chapter 11 Title 21 DCMR, Water Quality Standards, EPA's Technical Support Document for Water Quality Based Toxics Control, EPA/5055/2-90-001 dated March 1991 and other guidances and agreements as indicated below.

A. Outfall 002 - Outfall 002 is the primary outfall for the treated wastewater from the Blue Plains WWTP. The Potomac River serves as the receiving water for the effluent from Outfall 002.

As reported in the December 30, 1998 NPDES permit reissuance application the following describes the effluent characteristics for Outfall 002:

PARAMETER	MAX. DAILY DISCHARGE		AV. DAILY DISCHARGE	
	Concentration	Units	Concentration	Units
pH	6.0/7.2		6.6	
Flow	546	MGD	329	MGD
Temperature (winter) 11/97 - 4/98	68	° F	61.6	° F
Temperature (summer) 5/98 - 10/98	81.7	° F	76.1	° F
Metals, cyanides and total phenols. All undetected unless noted herein.				
Beryllium	< 5	ppb	< 5	ppb
Cadmium	0.56	ppb	0.15	ppb
Chromium	2.7	ppb	1.7	ppb

Copper	26.9	ppb	8.8	ppb
Lead	17.9	ppb	2.6	ppb
Nickel	12	ppb	4	ppb
Zinc	100	ppb	43.2	ppb
Iron	5.4	mg/l	0.36	mg/l
Volatile Organic Compounds				
Chloroform	6	ppb	5.3	ppb

CBOD5 (represented as mass limits)

The effluent limits at Outfall 002 for Carbonaceous Biochemical Oxygen Demand (5 day) (CBOD5) changed from the previous permit, which was issued in January of 1997. These limits are established in accordance with 40 CFR Section 122.44(d)(1), DC Water Quality Standards and the Potomac Strategy Management Commission Agreement. Permit limits are based upon CBOD5 rather than Biochemical Oxygen Demand (BOD) because the plant uses an advanced secondary treatment process to reduce nitrogen. Basing permit limits on CBOD5 eliminates the impact of nitrification on effluent limits. Mathematical calculations show that the removal efficiency is 96% which is greater than the 85% removal required at 40 CFR Section 133.

Based upon information received from the permittee (see attachment 2), the reduction of BOD in Blue Plains effluent can be calculated from the following:

For the Blue Plains influent -

$$\begin{aligned}
 \text{Total BOD in influent} &= 25.2 \text{ mg/l} \times 329 \text{ (average flow)} \times 8.34 \text{ (conversion factor)} \\
 &= 343,551 \text{ lb/day} \times 365 \text{ days/yr} \\
 &= 125,396,115 \text{ lb/year}
 \end{aligned}$$

For the Blue Plains effluent -

$$\begin{aligned}
 \text{Total BOD in effluent} &= 4.2 \text{ mg/l} \times 329 \text{ (average flow)} \times 8.34 \text{ (conversion factor)} \\
 &= 11,524 \text{ lb/day} \times 365 \text{ days/yr} \\
 &= 4,206,260 \text{ lb/yr}
 \end{aligned}$$

Subtracting effluent from influent -

$$125,000,000 - 4,200,000 = 120,800,000 \text{ lbs/year BOD reduction by Blue Plains}$$

The limits and monitoring requirement frequencies are the same as in the existing permit and are adequate to achieve attainment of the D.C. water quality standards.

Total Phosphorus (represented as mass limits)

This permit retains the average monthly limit of 0.18 mg/l for total phosphorus which, as in the previous permit, is based upon the Potomac Strategy Management Commission Agreement and EPA's best professional judgement. Based upon available data of full plant biological nitrogen reduction (BNR) process operation, EPA is allowing the monthly average to be expressed as a 12 month rolling average. This requires that in any 12 month period, no one month may exceed a mass of 1080 lbs/day and 0.35 mg/l. When full plant BNR process is in operation, the 12 month rolling average mass for a month shall be the total mass for the month plus the total mass for the previous eleven months divided by the total number of days in the 12 month period. The 12 month rolling average concentration for a month shall be the total mass for the 12 month period divided by the average daily flow (in mgd) for the 12 month period times 8.34. No single month in any 12 month period used to calculate a 12 month rolling average shall exceed a monthly average limit of 490 kg/day (1080 lb/day) and 0.35 mg/l.

The average weekly mass of 35 mg/l is based upon the performance of the facility after the installation of the BNR treatment process. This limit is based upon the 99th percentile confidence level. (See Attachment 1). As this new limit is based upon a significant process improvement and new data from that process change, the increase of the average weekly discharge from 0.27 mg/l to 0.35 mg/l does not constitute antidegradation as specified in the District of Columbia Water Quality Standards. In accordance with 40 CFR Section 122.44 (l)(B)(1) a new limit may be imposed if it is based upon new information. In this case, the new information is post-BNR performance data. Compliance with these limits is consistent with the goals of the Chesapeake Bay Program and will maintain the Potomac Strategy Management Commission Agreement total phosphorus loading goal.

These calculations are represented by the following:

$$99\% \text{ WAL} = \text{Average} + 3 * \text{STD}$$

Average = long term average

STD = standard deviation

Total Suspended Solids (TSS) (represented as mass limits)

The effluent limits and monitoring frequencies for TSS at Outfall 002 are in compliance with the Clean Water Act and its implementing regulations found at 40 CFR Section 122, the District of Columbia Chapter 11 Title 21 DCMR, Water Quality Standards, EPA's Technical Support Document for Water Quality-based Toxics Control (March 1991), and other guidances and agreements. This limit is carried over from the previous permit and is identical to the limitation and monitoring frequencies in the existing permit.

Ammonia Nitrogen (represented as mass limits)

The ammonia nitrogen limits have been recalculated in accordance with EPA's "1999 Update of Ambient Water Quality Criteria for Ammonia". This criteria updates the 1984 ammonia guidance document and incorporates additional information on the effects of ammonia upon aquatic life in fresh water systems. Although the District of Columbia did not incorporate all of the provisions of the 1999 ammonia criteria in its January 2000 triennial review of the Water Quality Standards, portions of it were incorporated into the 2000 version e.g., pH variations. Thus EPA has concluded that the use of the revised ammonia criteria is appropriate in this permit and it is consistent with the Commonwealth of Virginia's use of the new ammonia criteria for its permits, some of which also discharge to the Potomac River.

Ammonia limits in this permit are based upon the following:

- The 99th percentile effluent pH rather than the 90th percentile pH were used. The 99th percentile yields a pH ranging between 7.15 and 7.57 for chronic and acute conditions. While the previous permit has a pH range of 6.0 to 8.5, the nitrification-denitrification process will maintain the pH well below the permit maximum. Historically, it has been necessary to operate the wastewater treatment plant to prevent the pH from dropping below the lower pH limit rather than having to control a high pH. Because of the natural protection afforded by the process, a pH at a level of 8.0 or 8.5 is not likely. Therefore, the 99th percentile effluent pH is protective of the wasteload allocation.
- A revised chronic dilution based on 10 percent of the tidal flow as calculated from the Dynamic Estuary model rather than the full tidal dilution.
- Calculation of the weekly limits are based on the TSD rather than 1.5 times the monthly limit.

The ammonia limitations were derived by using the procedures set forth in the Technical Support Document for Water Quality Based Toxics Control. The following tables and calculation provide the essential information from these calculations.

Critical pH and Temperature, and Resulting Water Quality Standards

Period	90 th Percentile Temperature	90 th Percentile Chronic pH	90 th Percentile Acute pH	Acute Standard (mg-N/l)	Chronic Standard (mg-N/l)
Winter I	13.4	8.0	7.0	36.1	2.62
Winter II	14.0	8.4	6.9	39.1	1.29
Summer	28.2	8.0	6.9	39.1	1.01

CORMIX - Predicted Dilution Factors

Period	Acute Toxicity Dilution Factor
Winter I	1.7
Winter II	1.7
Summer	1.7

Chronic Toxicity Dilution Factors

Period	Chronic Toxicity Dilution Factor
Winter I	24.0
Winter II	24.2
Summer	24.0

Equation for the calculation of Wasteload Allocation:

$$C_{w,WLA} = S[C_{WQS} - ([S-1]/S) C_{upstream}]$$

For a more detailed explanation please refer to the April 6, 2001, Memorandum entitled “Calculation of Ammonia Effluent Limits for Blue Plains WWTP” from Dave Dilks, Scott Bell and Dan Herrema, of Limno-Tech, to Ron Bizzarri, Greeley and Hanson, which is found in the administrative record.

Total Nitrogen

The District of Columbia, as a signatory to the 1987 Chesapeake Bay Agreement and the 1992 Amendments to the Chesapeake Bay Agreement, supports the goal of reducing nutrients to the mainstem of the Chesapeake Bay by 40 percent by the year 2000. By this permit, EPA has established a nitrogen goal of 7.5 mg/l for Blue Plains. This goal is intended to be sufficiently stringent to comply with the Bay narrative standards and is to be achieved by operating the Biological Nitrogen Reduction (BNR) process at the facility on a year round basis. Total nitrogen concentration is the sum of organic nitrogen, ammonia nitrogen, plus nitrite and nitrate nitrogen concentrations

This permit may be reopened and revised to include more stringent nitrogen limits in the event that EPA develops criteria for nitrogen and the District of Columbia develops a water quality standard for nitrogen.

Fecal Coliform and Enterococci

Fecal coliform effluent limitations and monitoring requirements remain the same as the existing permit and are designed to meet District of Columbia Water Quality Standards.

Enterococci monitoring is carried over from the existing permit and is based upon studies which have shown that the correlation between health effects and enterococci concentrations are more closely related than the traditional surrogate fecal coliform. In addition, monitoring for enterococci will help assess the effectiveness of the disinfection process.

Dissolved Oxygen

The dissolved oxygen limitations and monitoring requirement frequencies are retained from the existing permit. Continuous *in situ* monitoring and recording should continue. These conditions are based upon the District of Columbia Water Quality Standards (DC WQS).

Total Chlorine

Total chlorine residual and pH limits and monitoring are based upon the existing permit conditions for attainment of DC WQS.

Mercury

The existing NPDES permit contains a requirement to test the effluent for mercury at Outfall 002 using a sensitive analytical methodology. An analysis of the quarterly Discharge Monitoring Reports (DMRs) for 1997, 1998 and 1999 show no measurable levels of mercury in Outfall 002 effluent. In addition, as shown in the effluent characterization chart above, effluent samples in the permit application for mercury were non-detect. The effluent monitoring requirements for mercury are retained as in the existing permit.

In addition to the monitoring requirement for mercury, the existing permit contains a Special Condition requiring annual fish tissue studies for mercury on fish caught in the receiving stream. Edible fish tissue analysis conducted on behalf of WASA showed that the total mercury concentrations in fish did not exceed the FDA action level of 1 mg/kg in any sample. Based upon the low amounts of mercury in the influent, no measurable levels in the effluent and the low levels in the fish tissue, EPA is removing the requirement for fish tissue analysis. The permit retains the requirement to sample for mercury in Outfall 002 effluent on a bimonthly basis.

WET, TRE

The existing permit required the permittee to perform Whole Effluent Toxicity (WET) testing. This requirement has been deleted from this draft permit as the WET tests conducted since issuance of the existing permit show no reasonable potential to exceed water quality standards for toxicity. It should be noted, however, that the performance of a WET test will be required for the next permit application. Deletion of the WET test also removes the requirement for a Toxicity Reduction Evaluation (TRE) test which was required, as applicable, in the existing permit.

Flows During Construction

The effluent limitations for Outfall 002 have been revised to reflect construction flows during the pendency of the improvement and rehabilitation program at the Blue Plains WWTP. The construction will be divided into seven major phases based upon the removal from service of significant process tank capacity. It is estimated that at any one time, approximately 25% of the treatment processes may be out of operation.

During the pendency of this permit, flow rates through complete treatment should be as follows:

Flow Condition	Plant Influent with Primary Treatment	Excess Flows Chlorination/dechlorination after Primary Treatment	Full Plant Treatment
Average Annual Flow (mgd)	370	0	370
Peak Flow, 1 st four hours (mgd)	847	336	511
Peak Day Flow, after first four hours (mgd)	786	336	450

At the proposed flows, the effluent total nitrogen limits are expected to be met during the pendency of the construction.

Toxic Metals - (Please refer to the Administrative Record for an in-depth discussion of Toxic Metals)

Application and DMR data were reviewed for toxics and metals to determine if there was a

reasonable potential for violation of DC WQS. The reasonable potential studies were based upon EPA's Technical Support Document for Water Quality Based Toxics Control, EPA 505/2-90-001, March, 1991, (TSD). One study was performed by the Cadmus Group at the request of EPA Region III, and a second analysis was performed by Greeley and Hanson Engineers, consultants to WASA. In its analysis, the Cadmus Group used steady state mass balance calculations and simple assumptions to derive a reasonable potential analysis.

In its reasonable potential analysis, Greeley and Hanson used Potomac River dilution data which was established during the ammonia studies using the Cornell Mixing Zone Expert System (CORMIX). In addition, Greeley and Hanson made use of an extensive set of plant effluent data, and recently developed river condition data sets. This data was not readily available to the Cadmus Group.

Metals were evaluated where an effluent concentration and a background concentration had been quantified. In accordance with the TSD, values reported as "undetected" or "below quantification level" were reported as zero. The metals considered in this study included the following: cadmium, copper, iron, lead, nickel and zinc. Dilution factors were taken from a Limno-Tech study completed in April of 2001 (see administrative record, LTI ammonia memorandum of April 6, 2001). The dilution factors were as follows:

CORMIX Dilution Factors

Critical Season	Chronic (1)	Acute (2)
Summer	24.0	1.7

(1) Corresponds to 7Q10 flow (652 cfs)

(2) Corresponds to 1Q10 flow (564 cfs)

The dilution factors were calculated to incorporate the mixing zone limitations in the DC WQS.

Wasteload allocations were calculated based upon the dilutions found in the Limno-Tech April 4, guidance. The chronic and acute statistical results are found as Appendix B of the Limno-Tech April 4 memo. A summary of chronic and acute evaluations for toxicity can be shown as follows:

	Chronic Evaluation 4 Day	Acute Evaluation Daily
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	Calculated WLA	Average Effluent	Calculated WLA	Average Effluent
Metal	ug/l	ug/l	ug/l	ug/l
Cadmium	39.45	0.41	12.5	0.65
Copper	467	19.7	52.4	30.3
Iron	11,160	304	N/A	N/A
Lead	119	9.55	217	18.1
Nickel (1)	6,435	0.97	4,104	1.42
Zinc	4,042	83.9	325	122

(1) Based upon 4 data points

As is illustrated by the above, in all cases, the wasteload allocation is greater than the predicted effluent and thus, the data show that no reasonable potential for metals toxicity exists.

Using an independent internal EPA analysis of the studies, EPA is in agreement with the Greeley and Hanson finding that the CORMIX/effluent statistics approach provides greater accuracy in predicting reasonable potential for metals versus the steady state model and simple assumptions which was used by Cadmus. Further, Greeley and Hanson had access to more complete plant data and recently developed river data sets, thus, EPA has chosen to use their analysis for toxic metals analysis, rather than the Cadmus analysis.

Reductions in metals monitoring frequencies for Blue Plains were determined based upon EPA's *Interim Guidance for Performance-Based Reductions of NPDES Permit Monitoring Frequencies (April 1996)*. This approach shows that monitoring for metals may be reduced from weekly monitoring to once every two months, based upon hypothetical permit limits for the metals of concern. The hypothetical permit limits were calculated as follows:

- Wasteload allocation values to protect against acute and chronic toxicity were calculated using the dilution factors calculated from CORMIX and DEM, and applicable water quality standards.
- The wasteload allocation concentrations were converted to hypothetical permit limits

following the procedures found in *EPA's Technical Support Document for Water Quality Based Toxics Control*.

B. Outfall 001 - Outfall 001 is the discharge point on the Potomac River for excess flow. At Blue Plains, excess flows receive primary treatment, chlorination and dechlorination prior to discharge. Outfall 001 discharges approximately 3 - 4 times per year.

As reported in the December 30, 1998 NPDES permit reissuance application the following describes the effluent characteristics for Outfall 001:

PARAMETER	MAX. DAILY DISCHARGE		AV. DAILY DISCHARGE	
	Concentration	Units	Concentration	Units
pH	6.0/7.2		6.6	
Flow	107	MGD	33	MGD
Temperature (winter) 11/97 - 4/98	63	° F	57	° F
Temperature (summer) 5/98 - 10/98	65	° F	65	° F
Metals, cyanides and total phenols. All undetected unless noted herein.				
Cadmium	1.08	ppb	0.42	ppb
Copper	45.7	ppb	22.6	ppb
Lead	29.8	ppb	11.52	ppb
Zinc	162	ppb	90	ppb
Iron	4.98	mg/l	0.36	mg/l
Volatile Organic Compounds N/A				

In prior Blue Plains permits, Outfall 001 has been included with the listing of CSO outfalls. However, EPA's CSO Policy, enacted into law by the Wet Weather Water Quality Act of 2000, (and which expands upon the Agency's September 8, 1989, CSO Control Strategy), states that "a CSO is the discharge from a Combined Storm Sewer (CSS) at a point prior to the POTW Treatment Plant." The discharge from Outfall 001 occurs within the POTW, after the influent has received primary treatment, disinfection and dechlorination.

Under EPA regulations, the intentional diversion of waste streams from any portion of a treatment facility, including secondary treatment, is a bypass. EPA bypass regulations found at 40 CFR Section 122.41(m) allow for a facility to bypass some or all of the flow from its treatment process under specified limited circumstances. Under the regulation, the permittee must show that the bypass was unavoidable to prevent loss of life, personal injury or severe property damage, that there was no feasible alternative to the bypass and that the permittee submitted the required notices. In addition, the regulation provides that a bypass may be approved only after consideration of adverse effects.

The CSO Policy states that for some CSO-related permits, the study of feasible alternatives in the Long Term Control Plan (LTCP) may provide sufficient support for the permit record and for approval a CSO-related bypass in the permit itself, and to define the specific parameters under which a bypass can legally occur. For approval of a CSO-related bypass, the LTCP, at a minimum, should provide justification for the cut-off point at which the flow will be diverted from the secondary treatment portion of the treatment plant, and provide a benefit-cost analysis demonstrating that conveyance of wet weather flow to the POTW for primary treatment is more beneficial than other CSO abatement alternatives such as storage and pump back for secondary treatment, sewer separation or satellite treatment. The permittee will be required to address the continued use of Outfall 001 in its LTCP.

Flow

As noted above, flows have been revised to address wet weather flows during construction.

Carbonaceous Biochemical Oxygen Demand (5 day), Total Residual Chlorine, pH and TSS

CBOD5, total residual chlorine, pH and TSS effluent conditions and monitoring frequencies are carried over from the existing permit.

Fecal Coliform

EPA has retained the effluent conditions and monitoring frequencies from the existing permit.

C. Outfall 019 - Outfall 019 is located at the south end of the RFK Stadium parking lot, on the west bank of the Anacostia River and adjacent to the East Side Pump Station. The purpose of this facility is to achieve maximum diversion of flow at the Structure 24 dams on the Northeast Boundary Sewer, and to concentrate the pollutants in that flow to a smaller flow which can be handled by the available capacity of the Eastside Pump Station. The Northeast Boundary Swirl Concentrator Facility provides treatment and disinfection for up to 400 mgd of combined sewer overflow before it discharges to the Anacostia River at Outfall 019.

The Northeast Boundary Sewer (NEB) is a combined sewer which serves 4,250 acres and is

the largest drainage area in the District. The amount of flow necessary to trigger the Northeast Boundary Swirl is 15 mgd. Treatment at this facility includes mechanical screening of combined sewage influent, concentration of solid materials in the three swirl concentrator tanks, disinfection of the treated influent and dechlorination.

Monitoring requirements continue to be imposed upon Outfall 019 to assess the impact of the discharge on the receiving stream and the effectiveness of the swirl treatment system. Monitoring requirements for flow, TSS, total chlorine, fecal coliform and enterococci remain the same as in the previous permit. Long term treatment of Outfall 019 will be addressed in the Long Term Control Plan in accordance with EPA's CSO Strategy.

9. GENERAL PERMIT CONDITIONS.

General conditions are requirements that must be incorporated into every permit, in accordance with 40 CFR Sections 122.41 and 122.42. These requirements delineate the legal, administrative and procedural requirements of the permit.

Penalties for Violations of Permit Conditions has been updated to reflect higher penalties due to changes in the CWA penalty provisions.

When EPA is the permit issuing authority it is required under section 7(a)(2) of the Endangered Species Act (ESA) to ensure that its permits are consistent with the requirements and goals of ESA. Thus, a new condition has been written into the permit requiring the permittee to submit Discharge Monitoring Reports to the U.S. Fish and Wildlife Service and to the National Marine Fisheries Services. This requirement will provide information to those services regarding discharges which may affect threatened or endangered species or the habitat of threatened or endangered species.

10. COMBINED SEWER SYSTEM PERMIT CONDITIONS.

A. Nine Minimum Controls

The list of combined sewer outfalls (CSOs) has been updated. These requirements are based upon EPAs Combined Sewer Overflow Policy, April 1994, and EPA CSO guidance documents. For CSOs, the technology based requirements are the following Nine Minimum Controls:

- a. Operation and maintenance has been expanded to include requirements for maintaining a complete combined sewer system (CSS) inventory; inspecting control structures, pumping stations, the Swirl, inflatable dams and the SCADA system; developing an inspection program for the CSS; and inspecting outfalls.
- b. Maximize use of the collection system for storage requires that regulators and other

appurtenances be operable at all times.

- c. The pretreatment regulations are to be used to control industrial discharges which may impact CSOs, especially during wet weather.
- d. Flow to Blue Plains is to be maximized and there are to be no overflows when sufficient treatment capacity is available at the POTW.
- e. Dry weather flows are prohibited.
- f. Solid and floatable materials in CSOs are to be controlled with end-of-pipe netting and baffles at specified outfalls; inspection of BMPs; annual catch basin cleaning; use of a skimmer boat on the Anacostia; and screening of pumped overflows at the Main and O pumping stations and the Northeast Boundary Swirl.
- g. Pollution prevention programs are to be developed by developing public education programs; tours of Blue Plains designed to educate the public regarding CSO control; enforcing regulations to prohibit damaging substances into the sewer system; and continuing existing P2 programs such as curbside recycling.
- h. Public notification procedures such as the installation of warning lights, operation of a website with CSO information, signs warning of outfall areas, and preparation and distribution of pamphlets which describe CSO locations for recreational users of the river are required by this permit.
- i. Monitoring of the CSO is required including operation of the SCADA; wet weather surveys; monitoring and recording debris amounts on the Anacostia; and verification of flows reported in the Long Term Control Plan (LTCP).

B. Long Term Control Plan

The permittee has submitted a proposed LTCP to EPA. The draft LTCP was made available to the public for comment and EPA and members of the public have submitted comments to the permittee. The permittee is required to submit a final LTCP to EPA by September 30, 2002.

Implementation of the Nine Minimum Controls and the LTCP are the subject of a lawsuit, Anacostia Watershed Society, et al. v. District of Columbia Water and Sewer Authority, et al. U. S. District Court of D.C. Civ. Action No: 1:00CV00183TFH.

On December 14, 2001, EPA approved the District of Columbia's Total Maximum Daily Loads (TMDLs) for BOD and on March 1, 2002, EPA issued a TMDL for TSS. Both of these

TMDLs were for the Anacostia River. Both of these TMDLs are presently subject to judicial challenge in Friends of the Earth v. Whitman, DC Circuit Court of Appeals No. 02-1123, consolidated with 02-1124.

11. SPECIAL CONDITIONS.

- A. Pretreatment - Section 402(b)(8) of the Clean Water Act requires that POTWs receiving pollutants from significant industrial sources subject to section 307(b) standards establish a pretreatment program to ensure compliance with those standards. The implementing regulations found at 40 CFR 403.8 require POTWs with a total design flow greater than five million gallons per day and receiving pollutants from industrial sources which pass through or interfere with the operation of the POTW, to establish a pretreatment program.

The pretreatment requirements are carried over from the previous permit but updated and expanded to include the following: a requirement that the Annual Report contain an updated industrial listing and a summary of Significant Industrial Users (SIU).

- B. Standard sludge conditions - the CWA requires that EPA regulate the use and disposal of sewage sludge to protect public health and the environment. These standards which are found at 40 CFR Part 503, consist of general requirements, pollutant limits, management practices, operational standards and monitoring, record keeping and reporting requirements. The existing permit contains provisions that are carried over into the proposed permit.
- C. Chlorination and dechlorination - as described in section 5 above, chlorination is necessary to ensure the disinfection of the waste and dechlorination is necessary to remove chlorine from the waste stream prior to discharge. These requirements are carried over from the existing permit.
- D. Mercury - based upon the results of mercury level studies in fish tissue, EPA has suspended the requirement for these tests in this draft permit.
- E. Total nitrogen - EPA is establishing a goal for total nitrogen of 7.5 mg/l in this permit. This is consistent with the Chesapeake Bay Agreement and its amendments.
- F. Storm water management - EPA has added a new requirement for the permittee to develop and submit a Storm Water Pollution Prevention Plan for the sludge handling area and any other portion of the POTW as appropriate.
- G. 85% Reduction - EPA has added a new provision requiring the permittee to test the

sewage treatment plant's influent in order to accurately measure the percent removal parameters for BOD and TSS. Since this is an advanced treatment facility, one sample to verify the percent efficiency is to be analyzed during the life of this permit.

- H. Notification of downstream public water systems - A Regional policy has been developed which requires major NPDES permit holders to notify public drinking water supply facilities located within 25 miles downstream of NPDES outfalls of spills, upsets or other conditions which may affect the quality of water at the intake for such public water supplies. EPA has identified one provider of public drinking water within the 25 mile downstream limit of Blue Plains, however, as that provider uses wells rather than water from the Potomac, EPA has waived the notification provision.

12. Public Notice Publication Date, *Washington Post* : August 7, 2002

13. District of Columbia Certification Date:

14. State of Maryland Comment Date:

15. Commonwealth of Virginia Comment Date: